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DESCRIPTIONS OF CO-EXTENSION PATHS IN KHASI[1]

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Abstract

This study looks at the description of inanimate objects in Khasi using motion or dynamic expressions. The paper specifically looks at how information on path and manner is encoded in such expressions. These descriptions are taken from an elicitation experiment. The first part of the paper gives a brief account of the experiment and the quantitative results. The experimental design consists of speakers describing visual scenes containing spatially extended objects, such as roads, pipes and fences. The second part of the paper focuses on the linguistic analysis of the descriptions. It is found that Khasi speakers in this study use a combination of path verbs, manner verbs, path and manner conflating verbs, and compound verbs with deictic components to describe these objects. A fairly large repertoire of verb types is attested in the data. The combination *ja^{y}d 'walk'+ satellite* is the most frequently used verb, placing Khasi in the category of satellite languages. It is also observed, that boundary crossing acts as a stimuli feature with path-conflating verbs. These constitute the second and third most frequently used verb types. The use of some *path+manner* conflating verbs places Khasi in the category of languages with non-actual movement, in the hierarchy proposed by Blomberg.

Keywords: co-extension path, non-actual motion, spatial grammar, extended objects, image descriptions, linguistic typology of motion, Khasi
ISO 639-3 codes: kha

1. Introduction to theories of spatial cognition

This paper examines Khasi descriptions of inanimate, spatially extended objects using motion verbs. The descriptions were given by native speakers of Khasi in an elicitation experiment, designed to test the motivations for the use of motion verbs to describe static, inanimate entities. There are two aspects to the study, one, the cognitive motivations for the use of motion verbs, and two, the categorization of Khasi in spatial grammar typology.

Spatial cognition is an important cognitive capacity. Its centrality can be seen in the way we use our bodies (and their configurations) in relation to other objects, to talk of many other aspects of life – emotions (e.g. to *fall* in love), time (e.g. time flies, inflation of prices (e.g. prices *rise*/*go up*), amongst many other aspects (Lakoff and Johnson 1999; Lakoff and Johnson 2003). It is no surprise then that studies in spatial

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cognition have optimistically looked for universals that may form the core of our spatial thinking. Proposals of universals have been challenged, fine-tuned and fortified by studies in spatial grammar typologies, with systematic differences in spatial grammars reported across languages (Levinson and Wilkins 2006).

Two prominent structural elements identified to analyze spatial cognition and language, which are shared by every language, include *Figure* and *Ground* (Talmy 1985; Levinson 1996). *Figure* is the object that is discussed with reference to another object, the *ground*. The relation between the two can be static, kinetic or translational (Levinson 2003; 2006; Talmy 1996; 2000). *Stasis* and *kinesis* (*translocation*) form the binary conceptual subdivisions of our spatial reasoning: objects are spatially at rest or moving. Between stasis and kinesis, we have what scholars have referred to as fictive motion/abstract motion/subjective motion/non-actual motion (Talmy 1983; 1991; 1996; Jackendoff 1983; Langacker 1990; Matsumoto 1996; Blomberg 2014). Examples of such descriptions include those in 1a to 1c.

1a. The fence goes/zigzags/descends from the plateau to the valley.
[cf. I went/zigzagged/descended from the plateau to the valley.]
1b. The field spreads out in all directions from the granary.
[cf. The oil spread out in all directions from where it spilled.]
1c. The soil reddens toward the east.
[cf. (i) The soil gradually reddened at this spot due to oxidation.
(ii) The weather front advanced toward the east.]
Talmy (2000a: 138)

These descriptions include what are prototypically motion verbs or verbs of change - 'goes', 'zigzags', 'descends', 'spreads' and 'reddens.' However, these are used for static objects: 'the fence', 'the field' and 'the soil' respectively. The first example is a type of fictive motion expression that this paper is investigating, which is called a 'co-extension path'.[2]

1.1. Fictive motion typology

Scholars have found fictive motion expressions fascinating because they straddle the line between literal and non-literal expressions. Questions about fictive motion expressions are asked in both the field of cognition and linguistic typology. In cognitive studies, underlying processes that motivate fictive motion hold a significant place (Talmy 1996; 2000a; Langacker 1990; Blomberg 2014). Empirical data suggests that the cognitive processes involved in these cases are dynamic. This gives rise to dynamic expressions of static objects or static states of objects (Matlock 2004; Blomberg 2014). Several motivations have been proposed for the use of motion expressions to describe extended objects. These range from the biological – human predisposition to motion (Langacker 1990; Talmy 1996; 2000a) to metaphorical reasoning (Jiménez Martínez-Losa 2007; Ma 2016) and mental simulation (Matlock 2004). Another question that has evoked some interest is whether speakers actually experience motion while using fictive motion expressions[3] (Matsumoto 1996; Matlock 2004). Studies approaching the fictive motion question through a linguistic typological lens have been smaller in number (including Talmy 1996; Matsumoto 1996; Rojo and Velenzuela 2003; Taremaa 2013; Blomberg 2014; Stosic et al 2015; and Ma 2016, among others) and have mostly made use of typological classifications devised to categorize actual motion events. Through a comparative study of English and Japanese, Matsumoto (1996) proposes some very significant correlations on the use of motion verbs to describe static objects:

> **The Path Condition**: All fictive expressions must express some property of the path of motion.
> **The Manner Condition**: No property of the manner of motion can be expressed unless it is used to represent some correlated property of the path.
> (Matsumoto 1996: 12)

[2] For more information on other types of fictive motion expressions, please refer to Talmy (1996; 2000a).

[3] Through behavioural experiments and eye-tracking studies, Matlock came to the conclusion that the simulation of motion is a motivator of fictive motion (Matlock 2004).

Matsumoto's study is also important for highlighting another major constraint on what can be described using non-actual motion (henceforth **NAM**) expressions (especially with special reference to Japanese). It is found that extended objects, such as roads, which allow actual human motion, also facilitate the use of NAM expressions.

The latest typological and theoretical contribution to the field is Blomberg's hypothesis that "enactive perception" is a prime motivator for non-actual motion. This typological proposal is based on the level of dynamicity that a language allows to be encoded in a NAM expression (Blomberg 2014). For example, Blomberg's work on Thai shows that information on manner is retained when manner verbs are used by speakers to express the velocity of movement along the objects being described (Blomberg 2014). According to Blomberg, languages may potentially express non-actual movement, non-actual motion and non-actual path. Non-actual movement includes information about velocity, and as this paper proposes, also information about body configurations while moving. Non-actual motion refers to the use of motion verbs to describe static objects. Non-actual path refers to the use of dynamic expressions through the use of prepositions, case markers, and the like, but without the use of motion verbs. Thus, a hierarchy is proposed: *non-actual path* < *non-actual motion* < *non-actual movement* (Blomberg 2014). That is, a language with non-actual movement may also have non-actual motion and non-actual path, while the reverse may not hold true. Theoretically, Blomberg's approach differs from that of Talmy, Langacker or Matlock. He takes a phenomenological stance, which includes the role of the perceptual object in producing NAM[4] (Blomberg 2014). The model he builds includes three motivators for NAM, with the primary one being 'enactive motion'[5] (Blomberg 2014; Stosic et al. 2015). Enactive motion is a mode of seeing and experiencing extended objects. This is described as the *first-person perspective* for the purpose of experiments in Blomberg's design (Blomberg 2014). The second motivation is 'visual scanning'. This is referred to experimentally as the *third person perspective* (Blomberg 2014). The third motivation for the use of NAM is 'metaphors' (Blomberg 2014).

Typological studies on NAM, which use actual motion typology to describe how languages encode extension, identify four core elements - *motion* and *path* (represented by the verb), and *figure* and *ground* (represented by the participants in a visual scene) (Talmy 1975, 2000b). It is proposed that languages may be classified as *verb-framed* or *satellite-framed* on the basis of how they structurally encode a motion event (Talmy 1985, 1996). A third-category of *equipollently framed* languages has also been proposed (Slobin 2004, 2006). Examples 2a to 2c from English (2a), Spanish (2b) and Mandarin Chinese (2c) illustrate this typology.

2a an owl flew out

2b	sale	un	buho
	exits	an	owl

2c	fei1	chu1	lai2	yi1	zhi1	mao1tou2ying1
	fly	exit	come	one	CL[6]	owl

(Slobin 2006: 4)

In this paper, we propose to explore the ways in which Khasi[7] speakers describe extension, both in terms of Talmy's and Slobin's typologies. In addition, we explore the kind of manner information that Khasi allows, and attempt to locate it in Blomberg's typology of Non-actual motion. This paper includes two

[4] In a similar vein, it also treats languages as existing in the linguistic environment as well, instead of it being a purely mental phenomenon (Blomberg 2014).

[5] Enactive motion is the experience of motion that arises from the "indispensable connection between visual perception and the potential for self-motion" (Blomberg 2014:173). That is, enactive motion refers to the experience of motion of static objects in NAM because of the dynamic relationship between our perception of an object that affords human motion and the way in which such an object reveals itself to us.

[6] Slobin originally glossed zhi_1 as 'only' (which is zhi_3), whereas it is a classifier for animals 隻 zhi_1.

[7] There are several varieties of Khasian languages (Diffloth 2005; Sidwell 2009; Koshy and Wahlang 2011). 'Khasi' as used in this paper refers only to Standard Khasi.

sections: (a) the different motivations behind the use of NAM, and, (b) the various descriptions of images given by the participants.

1.2. Khasi background and issues of spatial extention

Khasi is one of the very few Austroasiatic languages spoken outside Southeast Asia – generally considered the home of Austroasiatic languages. Khasi and other Mon-Khmer languages spoken in India are among the most poorly studied languages in the subcontinent, and therefore this study tries to fill an existing gap both in terms of a cognitive and a typological understanding of the language.

Khasi is an SVO language. It is polysynthetic and agglutinating through prefixes. Case is marked by a prefix. In terms of spatial grammar, Khasi marks Locative, Ablative and Allative cases, through affixation. It has a deictic system that marks both distance and elevation (Nagaraja 1985; Diessel 1999). This system is not surprising given that the language is spoken in a hilly terrain. The terrain in which a language is spoken has been shown to affect its spatial expressions in other languages as well (Schultze-Berndt 2006). Khasi uses a combination of elements from all three frames of references (Levinson 1996). In the relative frame of reference, it has *ka-diaŋ – ka-mon* 'left-right' coordinate points. It also has absolute frames of references *miʔ-ŋi* 'come out-sun (East)' and *sep-ŋi* 'finish – sun (West)'. However, there are no words for 'north' or 'south', and the *case + deictic* markers for elevation are used to talk about latitudinal differences, *ha/ʃa-rum* "lower" and *ha/ʃa-neŋ* "higher". For example, in Khasi, one could produce sentence 3 to talk about the location of Kashmir in relation to Delhi. To mark intrinsic frames of references, Khasi uses *case + deictic* markers.

3.	*ka-Kashmir*	*ka-don*	*ʃa-neŋ*	*joŋ*	*ka-Delhi*
	3FSG-Kashmir	3FSG-exist	ALL-high	GEN	3FSG-Delhi
	'Kashmir is north of Delhi'				

Khasi also has a rich system of word formation through compounding. This process makes Khasi an interesting language for the study of NAM, because as an agglutinating language, it allows VERB + VERB compounding, among other combinations. For example, we find combinations of a deictic verb *go* with a manner verb *walk* in *leʲt-jaːʲd* "go-walk".

With specific reference to Khasi, this study addresses the following questions:

- How do Khasi speakers describe spatial extension, and what kind(s) of verbs do they use to express extension?
- When used in NAM expressions, do such verbs retain their manner information? What do they convey, in so far as extension is concerned?
- Are compound verbs used in NAM expressions, and do their semantics undergo any change?
- How do other linguistic elements contribute to NAM expressions? For this purpose, the paper looks into how co-events (Talmy 2000b) such as the *manner* of motion gets represented in Khasi.

In the following sections, we try to address the questions posed above.

2. Methodology

The model and stimuli material is taken from the NAM model in Blomberg (2014)[8]. For this paper, we changed the terms, *1st person* and *3rd person*, used by Blomberg to *depth-extension* and *across-extension* because the terms *1st person* and *3rd person* are potentially misleading. The experiment uses images, and it could be argued that all images are actually from a 3rd person perspective, in that they do not represent an experience of the objects in the picture themselves, but a rendering of these objects by an artist. In that sense, any viewing of a picture is a third-person experience of the objects in the picture, making these terms slightly confusing.

[8] All stimuli materials are used with permission from Dr. Johan Blomberg.

2.1. Experiment design

The experiment involved four different types of image sets. These images are included in the appendix at the end of this paper. These image sets represent four conditions testing the role of enactive motion in NAM.

1. *Images with* [DEPTH-EXTENSION] + [AFFORD HUMAN MOTION] (DE+Aff)
2. *Images with* [ACROSS-EXTENSION] + [AFFORD HUMAN MOTION] (AE+Aff)
3. *Images with* [DEPTH-EXTENSION] - [AFFORD HUMAN MOTION] (DE-Aff)
4. *Images with* [ACROSS-EXTENSION] - [AFFORD HUMAN MOTION] (AE-Aff)

The images were also designed to test if the point of view of the participant had any effect on his/her description. To do this, a landmark (house, tree, etc) was placed on the left or right of a figure (e.g. road, fence etc.) in across-extension perspective images and at the beginning or end of a figure in depth-extension perspective images. Some images used were also designed to feature region changes (i.e., regions with an obvious boundary, for example, roads and pipes coming out of a tunnel or entering into a tunnel, etc.). The stimulus display duration was self-timed. This was followed by a blank screen, during which participants had to give a description of the images that were displayed. They were instructed to try and describe the images in a sentence, in order to avoid situations where participants simply named objects present in the image (following, Blomberg 2014). 38 images were presented to each participant: 2 practice images, 12 controls and 6 images for every test condition. The experiment design was deployed on Psychopy (Pierce 2007) using a 16-inch laptop screen.

2.2. Participants

30 people, with a mean age of 25, participated in the experiment. Every participant chosen was a native speaker of Khasi and spoke English as a second language. They were temporarily in the cities of Hyderabad and Bangalore, India as students at the time when the data was collected. They reported speaking Khasi every day on the phone or with their friends. The experiment was conducted in Hyderabad and Bangalore.

3. Quantitative analysis and results

A total of 1,140 descriptions were recorded. Each recording was transcribed into text. An initial bin count was done to check for NAM expressions in the descriptions. We follow Blomberg's and Zlatev's criteria counting "all sentences in which (minimally) a motion verb is used to denote a situation that lacks observed motion" (Blomberg and Zlatev 2014) to decide what counts as a NAM expression. Of a total of 720 test conditions, there were 315 NAM expressions, which was 44% of the total count. This tallies with the findings in Stosic et al. (2015) that "the corpus study showed a very low frequency of NAM expressions across languages". This count, however, omits descriptions of posture and placement, which were counted as separate categories. Table 1 gives the count of NAM and non-NAM expressions obtained for every condition.

Table 1: *+NAM and –NAM expressions for every condition*

	+NAM	**-NAM**
DE+Aff	94	86
AE+Aff	88	92
DE-Aff	55	125
AE-Aff	64	116

The effect of affordability of motion on the use of NAM expressions is quite visible (cf. Matsumoto 1996). 50% of objects which afford human motion are described in NAM expressions, regardless of whether they extended in depth or across the image. Objects that do not afford human motion, on the other hand, represent only 33% of the NAM expressions.

Figure 1*. Effects of affordability of motion on NAM expressions usage*

Figure 2. *Effects of depth vs. across extension*

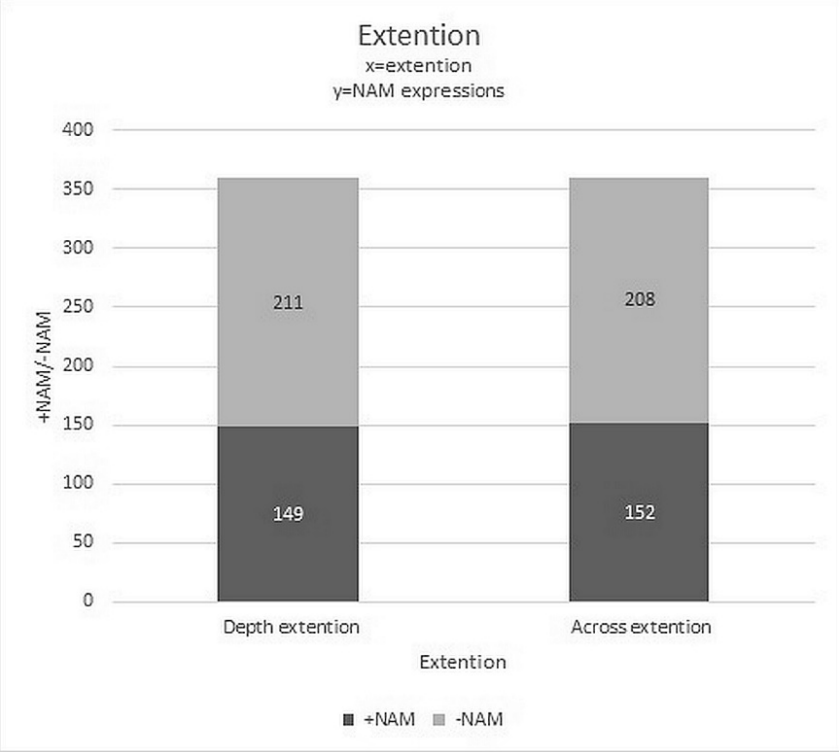
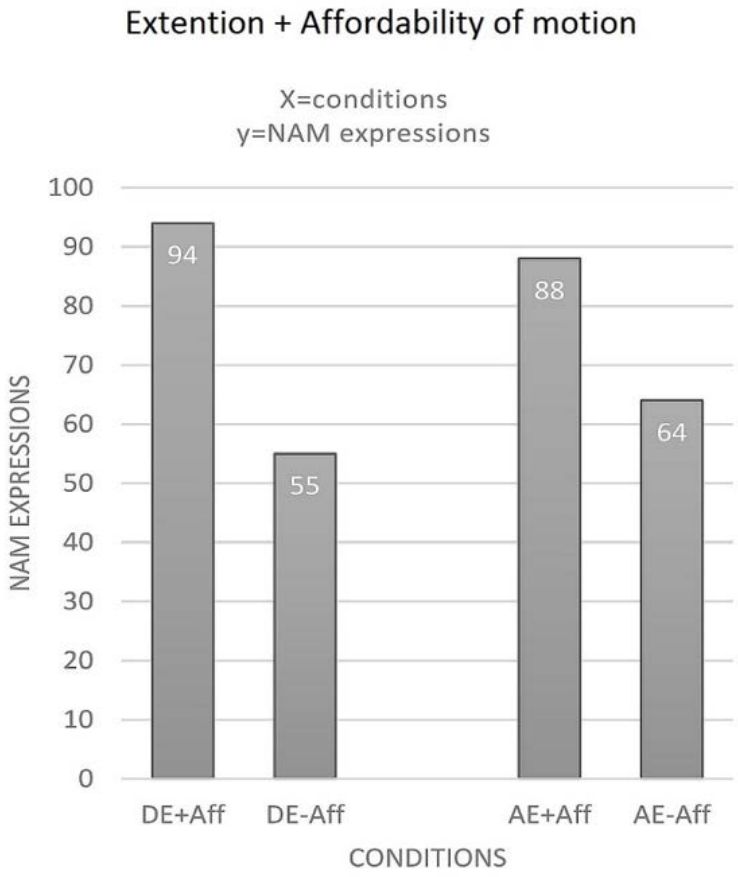


Figure 3. *Effects of extension + affordability of motion*



The graph in Figure 2 shows that the orientation of extension (i.e. depth versus across) by itself does not make any difference. Both conditions elicit more or less the same number of NAM expressions. However, in Figure 3, we see that the orientation of extension, when combined with the affordability of motion, gives rise to differences in the use of NAM expressions. The difference that we have in Figure 1 is partly a result of the massive difference that the property of affordability of motion makes when the object extends in depth. While this difference does exist when objects extend across images, it is not as significant. These results confirm Blomberg's hypothesis of enactive motion being a primary motivator of NAM.

4. Linguistic data

Different types of sentences elicited are included in the appendix. These sentences describe extended entities either as static objects or as objects in motion. Structurally, they are mostly sentences with relative clauses, and at times short simple sentences. These contain tokens of path-conflating, manner-conflating, path+manner, -conflating motion verbs, compound verbs as well as sentences with no verbs at all with reference made to the source and to the destination (e.g. from…to…). These sentences also illustrate the use of deictic markers, case markers and adverbs, to highlight features of the extended objects, such as their shape, direction and destination. The entire data set has not been included in the appendix, for lack of space. However, the different types of descriptions given by the participants have been adequately covered.

5. Linguistic analysis

To analyse the data, we look at the following aspects of the participants' descriptions:

- When talking about the extended property of the objects, do speakers use static terms or fictive terms or a combination of both?
- When using static terms, how do they convey extension?
- When motion expressions are used to describe these objects, we examine the ways in which the figure (the extended object) is referred to in relation to the ground(s).

While analyzing the data, we additionally look at 'boundary crossing' (sometimes referred to as 'region change'), which Slobin (1996) linked to the use of path verbs in Spanish. This was also incorporated by Blomberg (2014) into the design of his experiment. While direction is often treated as a part of path, we differentiate between the two and treat direction as a separate element of analysis, following Zlatev and Yangklang (2004) and Blomberg (2014) and Ma (2016).

5.1. Verb types and frequency count

We begin with the details of the different verbs that are employed by the participants in expressing NAM. The NAM expressing verbs also carry agreement markings like their non-NAM counterparts. Table 2 is a list of all the verbs found in the study.

Table 2: *List of verb types found in the data*

Manner	**Path**	**Direction**	**Cause**	**Path+ manner**	**Path+ direction**	**Manner +direction**	**Other**	**Total**
5	7	2	1	6	2	1	2	26
jaːʲd 'walk'	*kaːm* 'cross'	*leʲt* 'go'	*(ja)-lam* 'lead'	*ksam* 'claw'	*wan-pɔi* 'come-reach'	*leʲt- jaːʲd* 'go-walk'	*btɜŋ* 'connect'/ 'continue'	
pon 'bridge'	*pɔi* 'reach'	*wan* 'come'		*sam* 'pierce'	*wan-miʔ* 'come-exit'		*taːn* 'draw'	
pʰai 'turn'	*ruŋ* 'enter'			*par* 'crawl'				
kɜːr 'surround'	*miʔ* 'exit'			*pʰruŋ* 'insert'				
tiŋkʰɔʔ 'hit'	*sdaŋ* 'start'			*ŋam* 'go under'/dive'				

	kut 'end' *ke:w* 'climb'			*pin-pei* 'cause-hole'				

The list points to a very varied repertoire of verb-types used by participants .*Path* verbs dominate the set, closely followed by the set of *path + manner* conflating verbs. However, in our study's data, in terms of frequency of use, *manner* verbs and *path* verbs are amongst the most frequently used verbs in contrast to *path + manner* conflating verbs and *path + direction* verbs. Of these, although *ja:ʲd* is often used as a bleached manner verb, it is also used as a manner verb proper. We will discuss this in greater detail later. The high frequency use of a few verbs is similar to the case in English, in contrast to the more equally spread out use of verbs in Spanish, as reported in an English – Spanish study (Rojo and Velenzuela 2003). This is possibly because *jaʲd* can be combined with a number of satellite words to express path. Table 3 gives us a glimpse of the frequency with which the verbs have been used. However, the high frequency of path-conflating verbs *miʔ* and *ruŋ* is facilitated by the stimuli displayed, a topic that will be discussed in greater detail when we talk about path-conflating verbs in sections 6.3.2 and section 6.6.

Table 3: *Verb frequency*

Verb	Translation	Category	No. of times used
ja:ʲd	walk	Manner	149
miʔ	exit	Path	49
ruŋ	enter	Path	40
(ja)lam	lead/take	cause	22

Unfortunately, there is no comparative analysis available on verbs describing kinesis to contrast this with. It will require further studies. We do, however, present some sentences describing kinesis from other Khasi texts to compare them with some of the sentences here.

Khasi also encodes spatial information about path and motion by case markers, deictic markers, prepositions and adverbs, as listed in Table 4.

Table 4: *A list of satellites*

	Translation	Word Category
ha	Locative	Case marker
na	Ablative	case marker
ʃa-	Allative	case marker
-ne	proximal	deictic marker
-to	Medial	deictic marker
-ta	Invisible	deictic marker
-tey	distal-up	deictic marker
-neŋ	High	deictic marker
-lɔr	Top	deictic marker
-pɔʔ	Interior	deictic marker
-bar	Exterior	deictic marker
-duʔ	End	preposition
kʰmat	front	preposition
pdeŋ	center	preposition
liŋba	through	preposition
beʲt	straight	noun-modifier
ɟrɔŋ	Long	noun-modifer
ɟilleʷ	Deep	noun-modifier
beʲt-(beʲt)	straight	adverb
siak	straight up and precise	adverb
ter-(ter)	continuous and in a line	adverb
pɨrʃaʔ	against	adverb

ʃi-lɨnter	one-breadth (whole breadth)	adverb
lɨnter	continuously	adverb
-b^{h}a	Very	adverb
rɨntiʔ	neat	adverb

Information about path, direction and motion is encoded not just in a singular morphological unit but through the combination of these units.

In the next section, we examine how these verbs are distributed and combined with case, deictic markers and adverbs to represent an object's spatial layout. We also compare these with structures involving kinesis. To do this, we look at the words and clauses used to describe the images: (a) images without obvious boundaries between different objects, (b) images with obvious boundaries between different objects, (for example, tunnels) and (c) the effect of how the object extends in the visual field.

6. NAM as represented in Khasi

Khasi uses motion verbs and spatial deictic categories to represent NAM. The types of verbs used include *manner-conflating verbs*, *path-conflating verbs*, *deictic verbs*, and *compound verbs*. Direction and location are expressed through case markers, prepositions, and deictic markers. In addition, path and direction are also expressed using adverbs or reduplicated structures. The compound verbs used in NAM expressions are of special interest because of the encoding of both path and manner in these verbs when describing actual motion. For example, when describing objects in kinesis, Khasi expressions like *wan-ja:^{j}d* 'come-walk', encode information about the manner of motion, speed and direction of the path. Of these, the manner and speed of motion are encoded in *ja:^{j}d* and the direction of motion towards the speaker by *wan,* a deictic verb. Another compound verb describing motion is *wan-raʔ* 'come-carry (bring)'. *wan* 'come', which has a deictic component, adds direction to the verb *raʔ.* However, *wan,* even though a deictic verb by itself, is often accompanied by explicit deictic components like *p^{h}ai* as in *wan-p^{h}ai* 'come-turn (return in the direction of the speaker or hearer).' This is in contrast to the expression *le^{j}t -p^{h}ai* 'go-turn' (return in the direction away from the speaker or hearer). While these and other compound verbs are expected to be found in the descriptions of NAM, it is important to investigate if NAM contexts lead to any change in the semantics of the verbs.[9]

6.1. Description of object properties

When describing properties of objects, like being *straight* or *extended*, modifiers like *ɻrɔŋ* 'long/tall' and *be^{j}t* 'straight/directly' are used. We see these in descriptions exemplified in (3) and (7), which are both constructed in relative clauses. Images presented are often described with relative clauses and not with short simple sentences containing attributive adjectives. This is in conformity with the general Khasi pattern where modifiers of nouns (including relative clauses, numerals, adjectives, etc.) appear post-nominally. These modifiers are introduced by a relativizing particle *ba-*, which links them to the preceding nominal by carrying the gender marker of the noun as illustrated below.

4 *ka-k^{h}ɨnnaʔ* *ka-ba-ɻrɔŋ*
3FSG-child 3FSG-REL-tall
'The child who is tall, or, the tall child'

5 *ka-jen* *ka-ba-rim*
3FSG-house 3FSG-REL-old
'The house that is old, or, the old house'

[9] It is reported, for example, that serial verbs in Thai when used in NAM, conflate both path/direction and manner (Blomberg 2014). Languages which exhibit such conflation are labelled equipollently-framed languages (Slobin 2006).

6.2 Static descriptions

Khasi speakers do not use NAM expressions at all times, even when there is a potential to use one. In such cases, we find simple static descriptions of the objects. This results in an enumeration, presenting a general layout of the objects in view, as in sentences 6a and b, and 7a and b.

6a	*Don*	*ar-tɨlli*	*ki-ɟɟŋ-k^{h}aŋ-jɨt*	*i-jeŋ*	*ba-rit*
	Exist	two-NON.HUM.CL	3PL-NMZ-close-glass	3DIM-house	REL-small

‘There are two windows, a house that is small,

6b	*i-we^{y}*	*i- ɟɟŋ-k^{h}aŋ*	*ki-phlaŋ*	*bad*	*ka-lɨnti-jad*
	3DIM-one	3DIM-NON-close	3PL-grass	and	3FSG-path-walk

one door, grass and a path’.

7a	*Ka-lɨnti*	*ka-ba- be^{j}t*	*bad*	*ha-rud*	*ɟoŋ-ka-ne-ka-lɨnti*
	3FSG-path	3FSG-REL-straight	and	LOC-side	GEN-3FSG-PROX-3FSG-path

‘A straight path and on the side of this road there are two trees and two stones’.

7b	*ki-don*	*ar-tɨlli*	*ki-deŋ*	*bad*	*ar-tɨlli*	*ki-maw*
	exist	two-NON.HUM.CL	3PL-tree	and	two- NON.HUM.CL	3PL-stone

‘A straight path and on the side of this road there are two trees and two stones’.

The layout is presented using spatial relations like the locative case maker *ha-* in combination with location words like *-pdeŋ* ‘center’, *-rud* ‘side’, and the like. Such descriptions do not involve the case markers *na* and *ʃa,* the ABLATIVE and ALLATIVE markers, which are only used when the event is visualized as involving motion.

6.3. Motion verbs

The most important aspect of studying NAM is with respect to the kind of verbs used. We find that NAM is represented using *path-conflating* verbs, *manner-conflating* verbs, *compound* verbs (with a deictic component) and *Path and manner* conflating verbs.

6.3.1. Manner conflating verbs

NAM expressions involve different kinds of manner conflating verbs. *ja:^{j}d* ‘walk’, *jalam* ‘lead’, *k^{h}un* ‘turn’, and *le^{j}t* ‘go’ are some of them. When extended objects begin or end with a landmark (see DE+Aff, image 1 in the appendix), the verbs most frequently used are *ja:^{j}d* ‘walk’, *jalam* ‘lead’ and *le^{j}t* ‘go’ along with *pɔi* ‘reach’, a path conflating verb. Consider sentence 8 as an example.

8	*ŋa-joʔi*	*ka-wei*	*ka-lɨnti*	*ba-*	***ja:^{j}d***	*ʃa-jeŋ*
	1SG-see	3FSG-one	3FSG-path	REL	walk	ALL-house

‘I see a path that walks to a house.’

In 8, extension is encoded in the verb and the direction of extension is encoded in the ALLATIVE case marker *ʃa,* marked on the landmark, *jeŋ* ‘house’. If the extended object does not end in a landmark and changes boundary (e.g., roads with tunnels, roads running into forests, etc.), the change in boundary is expressed through manner conflating verbs with *case + deictic* markers/prepositions.

9	*u-pa^{y}t*	*u-ba*	***ja:^{j}d***	*be^{j}t - be^{j}t*	*ʃa-bar*	*na-krem*	*ʃa-bar*
	3MSG-pipe	3MSG-REL	walk	straight-straight	ALL-EXTERIOR	ABL-cave	ABL-outside

‘A pipe which walks very straight to the outside, from the cave to the outside…’

A change in boundary is not always expressed by case + deictic markers as in sentence 9. Extension through a region, when the image has more than one region, is also expressed by manner verbs that appear along with *liŋba* 'through'. The telic component (cf: Zwarts 2008) in *liŋba*, encodes information about the object having a path that also includes a particular region.

10 *ka-lɨnti* *(ka)-ba* ***ja:ʲd*** *liŋba-ka- tʌnəl*
3FSG-way 3FSG-REL walk through-3FSG-tunnel
'A path that walks through a tunnel.'

In most of its usage in a NAM expression, *ja:ʲd* 'walk' is bleached of its manner or speed information.[10] This is in consonance with Matsumoto's Manner condition, according to which manner of motion can be used only if it is used to express a property of the path. However, this Manner condition fails to hold in situations where *ja:ʲd* is used along with other verbs, as in sentences 11a and 11b.

11a *u-pait- um* ***u- ja:ʲd*** *lɨŋba* *u-lum- baʔ* *bad* ***u-ksam***
3MSG-pipe-water 3MSG-walk through 3PL-mountain-big CONJ 3PL-claw
'A water pipe walks through a big mountain and claws

11b *lɨŋba* *u-lom*
through 3MSG-mountain
through the mountain.'

In 11, *ja:ʲd* retains the velocity information when it is used along with *ksam* 'claw', a path and manner conflating verb. *ja:ʲd* also retains manner information when it appears in a compound verb with a deictic verb. This is discussed in greater detail in the section on compound verbs.

6.3.2. Path conflating verbs

NAM expressions involve different kinds of path conflating verbs. These include, *pɔi* 'reach', *ruŋ* 'enter', *miʔ* 'exit', *sdaŋ* 'start' and '*kut*' 'end', among others. These verbs are often followed by the case markers *ʃa, na* and *ha,* and optionally, a deictic marker. *ruŋ*, *pɔi* and *kut* being path-encoding verbs should not necessarily have to be followed by a directional case marker. However, these verbs primarily express a change in region or a crossing of boundaries and are, therefore, often accompanied by deictic markers *pɔʔ* 'INTERIOR' and *bar* 'EXTERIOR', which appear along with the case markers.

12a *ka-surɔk* *(ka)-ba* ***ruŋ*** *ʃa-pɔʔ-ka-tʌnəl*
3FSG-road 3FSG-REL enter ALL-INTERIOR-3FSG-tunnel
'A road that enters into a tunnel;

12b *ŋi* *ŋi-peit* *ja-ka-ne* *ka-surɔk* *na-pdeŋ-ɟɔŋ-ka*
3PL 3PL-look ACC-3FSG-PROX 3FSG-road ABL-centre-GEN-3FSG
we are looking at this road from its center.'

13 ***ka-ruŋ*** *ʃa-ka-tunnel*[11] *(ka)-ba* *jɨlle*^{w}
3FSG-enter ALL-3FSG-tunnel 3FSG-REL Deep
'It enters into a tunnel which is deep.'

These examples also explicitly state the way in which the object extends (i.e. the object extends into the picture). However, in section 6.6, we will look at how path-conflating verbs are used to express the direction

[10] The word *ja:ʲd* is also used in other domains like representing the passage of time (displacement).

[11] In the Khasi hills there are no tunnels, despite the region being largely hilly or mountainous. Participants either used the borrowed word 'tunnel' or used the word equivalent for 'hole' or 'cave'.

of extension of an object. In most cases, path conflating verbs are used in situations that feature a change of region or a crossing of boundaries. This is in accordance with Slobin (1996), who proposes this to be the motivation for the use of path-conflating verbs in any language.

6.3.3. Path and manner conflating verbs

In Khasi, path and manner conflating verbs include, *pʰruŋ* 'push-in/insert', *ksam* 'claw', *sam* 'pierce', *tɨŋkʰɔʔ* 'hit' and *ŋam* 'go under/dive'. These verbs are used when describing changes in region. *pʰruŋ* is a manner and path encoding verb. It describes a digging or penetrating action of the pipe into the earth, away from the speaker. As a path conflating verb, it does not require a directional case marker. *pʰruŋ* is usually followed by *ha-pɔʔ* 'inside', *na-ʃiliaŋ….ʃa-ʃiliaŋ* 'from-one side…to-one side' or *lɨŋba* 'through'. Similar verbs, conflating manner with path, are reported in French and Thai as well (Blomberg 2014). Another verb representing a digging action into the earth is *sam* 'pierce'. *sam* is always followed by *lɨŋba,* which provides the path information. Another path and manner conflating verb used in NAM expressions in Khasi is *pon*[12] 'bridge over', expressing the middle section of a path.

14	*u-paip*	*u-ba*	***pʰruŋ***	*ha-pɔʔ-kʰɨndəʷ*	
	3MSG-pipe	3MSG-REL	Insert	LOC-INTERIOR-earth	
	'A pipe that inserts into the earth.'				
15	*ki-tɨllɔŋ-um*	*ki-ba*	***sam***	*lɨŋba*	*ki-maʷ*
	3PL-source-water	3PL-REL	pierce	through	3PL-stone
	'The water sources that pierce through the stones.'				

It is important to note here that path and manner conflating verbs in Khasi retain information about the manner of motion. *pʰruŋ, sam* and *ksam* retain information about how the boundaries meet physically. *jaːʲd,* when used with *ksam,* retains information on the velocity with which the two objects meet, while *pon* bridges or connects two regions without the involvement of any motion.

6.4. Compound verbs

As briefly mentioned earlier, Khasi also uses compound verbs to represent objects in kinesis, as is demonstrated in sentence 16.

16	*…ki-la-ɟu-wan-hiar*	*ʃa*	*ka-pɨrtʰei*	*ban-rep*	*ban-riang*
	they-PST-HAB-go-descend	to	3FSG-earth	INF-cultivate	INF-imi
	'They used to go down to earth in order to cultivate.'				
	(Rabel 1961:149)				

While Rabel (1961) classifies *wan-hiar* as part of a serial-verb construction, it is treated as a compound verb here[13]. In *wan-hiar,* the verb *wan* provides the information on direction. The people descending are seen as coming towards the earth. The descent is towards the direction of the people speaking these lines.

It is also important to note here that compound verbs are not very commonly used in these structures. Some of the compound verbs used include, *leʲt - jaːʲd* 'go-walk', *wan-miʔ* 'come-exit' and *wan-pɔi* 'come-reach'. All these verbs have a deictic verb and a path or manner verb. The compounds are all left-headed, and both members are semantically transparent. In this context, motion and direction are conceptualized through the deictic verb, and the information about path or manner, or path and manner is conveyed through the head verb.

[12] The word *pon* might not have the same corresponding meaning 'bridge over' (Singh (1960); Kharkongor (1968)) in actual motion, except as a metaphor.

[13] The form *wan-hiar* 'come descend' takes inflections only on *wan*. *wan* is the light verb that adds direction to the verb *hiar,* while the meaning of the whole expression remains 'descend'.

17	*ka-lɨnti*	*ka-ba*	***leʲt- jaːʲd***	*ka-ba*	*tɨŋ-kʰoʔ*	*ha-kʰmat-ɟɨŋ-kʰaŋ*
	3FSG-trail	3FSG-REL	go-walk	3FSG-REL	hit	LOC-front-NMZ-close

'A trail that goes-walks hitting the front of the door.'

In the case of *leʲt - jaːʲd, jaːʲd* occurring in a compound verb retains its information about manner, as it would if it were used in an actual motion context. The usage of 'go' and 'come' gives us the information about the direction of the action from the participant's point of view. The compounded verb forms used include *wan-pɔi* and *wan-miʔ.*

6.5. Adverbs

Information about path is also encoded in Khasi by adverbs. These include, *beʲt - beʲt* 'straight–straight (very straight)', *stət* 'quickly', *siak* 'straight and precise' and *ter-ter* 'neatly in a sequence without ending'. Consider sentences 18 and 19.

18	*ka-wei-ka-lɨnti*	*na-ka-ɣeŋ*	*ka-ba*	***ɟalam***	***beʲt- beʲt***	*naŋ-ta*[14]
	3FSG-one-3FSG-path	ABL-3FSG-house	3FSG-REL	lead	straight-straight	ABL-there

'A path from the house that leads straight-straight from there.'

19	*ka-wei-ka-lɨnti*	*ka-ba*	***jaːʲd***	***siak,***	***tɨŋkʰoʔ***	*ha-kʰmat*	*ɟɨŋ-kʰaŋ*
	3FSG-one-3FSG-path	3FSG-REL	walk	straight on	hit	ALL-front	NMZ-close

'A path that walks straight on, hits the front of the door.'

The expression *jaːʲd siak* 'walk straight', for example, is used to visualize the precision in straightness of the road, before it hits the front of the door. Interestingly, the use of such adverbs may also allow the use of certain verbs like *tɨŋkʰoʔ* 'hit' encoding manner. That is, if the road is not expressed as being very straight and directed, this verb may not be used.

It is also interesting to contrast expressions representing NAM with those representing kinesis. Adverbs, for example, are often used to reveal more about the manner, speed and/or path of the motion. When manner is not specified by the verb, Khasi deploys a rich system of adverbs which provide the necessary information about manner[15]. In the following example, we have two adverbs, *soʸt* 'at once and leaving behind' and a reduplication of the adverb *beʲt.* The adverb *beʲt (-beʲt)* 'straight' represents the temporality of the path and not the actual direction. It signifies that the tiger went to the outskirts of the village without stopping anywhere in between.

20a	*u-kʰla*	***u-la-miʔ***	***sɔʸt***	*bad*
	3MSG-tiger	3MSG-PAST-exit	at once, leaving behind	CONJ

'The tiger left at once and

20b	***u-la-mareʔ***	***beʲt- beʲt***	*ʃa-rud-noŋ*
	3MSG-PAST-run	straight-straight	ALL-outskirt-village

ran straight to the outskirts of the village.'

(Ellas, H 1972:34)

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[14] The suffix *-ta* is a deictic marker that refers to the location mentioned earlier, in this case the house.

[15] Adverbs in Khasi are often formed through a process of reduplication and are a part of the class of words that scholars also classify as "expressives" (Diffloth, 1979). Expressives are a class of words whose semantics are formed phonoaesthetically and one of the ways of forming them is through iconicity. Austroasiatic languages, which includes Khasi are prolific in their use (Diffloth 1979).

It is difficult to list here, all the different adverbs used to qualify motion verbs in Khasi. The *Khasi – English dictionary* (Bars 1973) lists about a hundred adverbs [16](including reduplicated adverbs) that can appear along with *jaːʲd.* A study of kinesis could shed light on the intricate differences in Khasi *manner* and *path* encoding adverbs not used in NAM expressions. Having said that, we find that these adverbs are also used in the domain of NAM to describe the way in which the movement of these objects is experienced. Adverbs like *beʲt* 'straight' can be used either to describe the shape of the path or the shape of the destination of the path and not the path itself. Given that extended objects like pipes occupy multiple locations and can have varying backgrounds, an expression like *beʲt - beʲt* does not simply tell us about the path, but of the destination. This is similar to sentences like 'This road goes straight to the airport', which does not necessarily mean that the road is straight, but that it doesn't fork into multiple destinations.

The adverbial *ter* 'in a sequence' can be reduplicated to form *ter-ter* 'consecutively'. *ter-ter* is defined as "*ryntih bad khlemsangeh*" (Kharkongor 1968), which translates to 'neatly in a sequence without ending'. *ter-ter* tells us that the fence continues sequentially and also that it is a long fence, whose end is not visible. Consider sentence 21.

21	*ka-ɟiŋ-ker*	*ka-sdaŋ*	*na-u-deŋ*	***ka- jaːʲd***	***ter-ter***
	3FSG-NMZ-fence	3FSG-start	ABL-3MSG-tree	3FSG-walk	in a sequence
	'A fence starts from a tree, goes consecutively (on and on).'				

6.6. Point of view and the uses of ruŋ, miʔ

Apart from encoding NAM expressions, one of the basic uses of the *entry* and *exit* verbs is also to express the point of view of the speaker. This is also noted in the case of the use of compound verbs with deictic components[17]. Both *miʔ* "exit" and *ruŋ* "enter" are used to describe changes in region or crossing of boundaries by an object[18]. While the use of the entry and exit verbs are not restricted to a first-person point of view, the structures elicited have ended up elucidating the visual position taken by the participant, whenever the object extended in depth. This allows us to tell whether the participants placing themselves within the picture in an angle which looks into or outwards from the tunnel. For example, when images depict a change of region from *within a tunnel to the outside*, the preferred NAM verb is *miʔ*. When the verb *miʔ* is used, one understands that the point of view used is of the speaker from within the tunnel looking at a road going outside. The entry verb "*ruŋ"* is used in the opposite direction when compared to *miʔ*, to describe images with objects crossing boundaries from the *outside to the inside* of a tunnel. The placement of the tunnel on the right or the left end of the image makes no difference in the verb used.

Deictic verbs *leʸt* "go" and *wan* "come" are also used for changes in boundaries and for landmarks. However, there is not enough evidence in the data to demonstrate any preference for the direction of scanning. Sentence 22 illustrates this.

22a	*na-ka-ne-ka- baranda*	***ka-miʔ***	*ka-lɨnti- jaːʲd*	*ka-ba-n*	*leʲt*
	ABL-3FSG-PROX-3FSG-veranda	3FSG-exit	3FSG-path-walk	3FSG-REL-FUT	go
	'From this veranda exits a walking-path that will go				

22b	*ʃa-(pause)*	*ka-ba-n*	***miʔ***
	ALL	3FSG-REL-FUT	exit
	to.., that will exit.'		

[16] Some of the reduplicated adverbs were entered as verbs, e.g ɟa*ːʲd-kɟik-kɟik* "to walk as if on pins" and were treated as different ways of walking.

[17] It is to be noted that deictic markers in Khasi do not appear as independent forms, and appear only with case or agreement markers, except in the case of deictic verbs.

[18] In the study, *miʔ* is used by one speaker for an image that involved no change of boundary. The speaker thought of the trees depicted in the image as a forest and looked at the trees as a destination (creating a change of boundary scenario) instead of viewing it as the path coming towards the verandah.

While exit and entry verbs are very strongly correlated to the direction of extension that the participant assumes, we also find that participants prefer the use of *ʃa*, the ALLATIVE case marker in combination with *ja:ʲd* "walk" for images with depth extension. There is a general assumption of extension as going into the image and not towards the speaker.

With images involving ACROSS-EXTENSION, there seems to be no preference for the direction of the gaze with the gaze being guided by the position of the landmark, with the extension ending at the landmark, expressed through the use of a verb + ALLATIVE case marker.

In the cases listed above, we have deduced deictic information about the speaker's point of view through the path verbs and the compound verbs they use with a deictic component. In the next section, we look at the importance of deictic case markers in the presentation of spatial organization and processing in Khasi.

6.7. Deictic markers

Deictic markers are used particularly when expressing changes in boundaries. They are bound and always appear with case markers or [gender + number] agreement markers as in *ka-ne* '3FSG-PROX'. The shape of the agreement marker on the deictic expression depends on the morphological gender of the nominal it modifies.

Khasi has a very rich system of deictic markers. Apart from the usual categories like PROXIMAL and DISTAL, Khasi also recognizes a rare deictic category of REGION-INTERIOR. Khasi forms like *ʃa-rum* 'to the lower part of X', *na-rum* 'from the lower part of X', and *ha-rum* 'in the lower part of X' represent this deictic category. *–rum*[19] is used when spatially locating an object on a point of a slope. This deictic marker differs from *-tʰe* 'down there' in *u-tʰe* 'the male down there' or *ʃa-tʰe* 'to the place down there' (Diessel 1999). *-tʰe* has the features [+distant], [+down], while *rum* is [+lower]. In sentence 23 involving multiple deictic markers, we have a fence that is described as going from land into the water. It is described using a series of case and deictic markers. The change of boundary is expressed by a combination of case markers. The case markers, *naŋ-ne*, 'from here', *ʃa-tei* 'to distance' and *ʃa-pɔʔ* 'to inside' are used to convey a sense of continuity.

23	(…)	*naŋ-ne*	*ʃa-tei*	*ʃa-pɔʔ*	*ka-um*
		ABL-PROX	ALL-DIST	ALL-INTERIOR	3FSG-water
		from here to there into the water			

Changes in regions or a crossing of boundaries, when expressed by non-path verbs, is achieved through the use of case and deictic markers.

6.8. Non-actual path

Sometimes dynamicity or continuity is not expressed with motion verbs but with other words and phrases. A sentence like '*this road continues all the way to the coast*' conveys a sense of motion even in the absence of motion verbs. Blomberg (2014) categorizes these as *non-actual path*. In Khasi, we see such structures with the verbless sentences describing a bridge. The continuity is expressed through case markers *na…ʃa* and the kinetic information they provide gives such structures a sense of dynamicity. Similarly, the use of the form *sdaŋ...kut* 'start...end' describes the event/action/process to have had a beginning and an end, giving the description as a whole a sense of continuity. The use of the verb *bteŋ* 'continue', similarly, provides a sense of a process or an action that has started but not ended even though it is not a motion verb. Consider sentences 24a, 24b and 25.

24a	*…ki-ɟiŋ-ker*	*ki-ba*	*sdaŋ*	*na-u-ne-u-deŋ*

[19] The form *rum* is a clipped form of *kʰrum* which translates to 'the space under the floor/cellar' (Singh 1906). Like *pɔʔ, rum* can also appear as an independent morpheme, when appearing with a case marker. It can also be grammaticalised and bound. This is also a metaphorical mapping: the usual meaning 'under the house' mapped onto a lower point on a slope.

...3PL-NMZ-fence 3PL-REL start LOC-3MSG-PROX-3MSG-tree
'Fences that start from this tree

24b *ha-duʔ* *ba* *kut* *ʃi-lɨnter* *ɟɔŋ-ka-ne-ka-madan*
LOC-till REL end one-breadth GEN-3MSG-PROX-3FSG-ground
till the end, the whole breadth of the ground…'

25 *ka-ɟiŋ-keŋ* *ka-ba* *na-ʃi-liaŋ* *lom* *ʃa-ʃi-liaŋ* *lom*
3FSG-NMZ-sling 3FSG-REL ABL-one-side hill ALL-one-side hill
'A bridge from one side of a hill to a side of another hill…'

6.9. Metaphorical descriptions or manner verbs

An interesting verb that appears only occasionally in this study, is *par* 'crawl.' It is used in describing contexts involving tunnels. Used as noun, it stands for a 'mine' (tunnel). Though it looks similar to the noun-verb conversion pairs found in Munda languages like Mundari and Santali, these are only occasional in Khasi. It is to be noted that the use of *par* does not describe the velocity of movement, but the way in which a body must configure itself to go into holes or caves.

26 *...u-paip* ***u-par*** *naŋ-ta- na-pɔʔ- ɟoŋ-u-lom*
...3MSG-pipe 3MSG-crawl ABL-INVISIBLE-ABL-INTERIOR-GEN-3MSG-hill
'A pipe crawls from that from inside of the hill…'

27 *….ka-ta* *ka-surɔk* ***ka-par*** *na-pɔʔ- ɟɔŋ-u-lom*
...3FSG-INVISIBLE 3FSG-road 3FSG-crawl ABL-INTERIOR-GEN-3MSG-hill
'That road crawls from inside of the hill…'

This usage fits into the category of *non-actual movement* in Blomberg's typology (Blomberg 2014), since the description is not of movement but of the shape that the object itself has to take to go through a hole or a tunnel. However, the retention of the manner of movement here challenges Matsumoto's manner condition and begs for a closer look at limits that different languages place on information on manner in NAM constructions.

6.10. 'The road to go to a house'

Another structural type we find in the descriptions for roads, paths and bridges is of the type 'a road/path/bridge to go to a house'. The infinitival form in Khasi is expressed through *ban* + Verb. Constructions having the infinitival form only appear in descriptions which afford human motion. In these structures, of the form *ban* + Verb, the infinitival verb is used with an instrumental interpretation and cannot be treated as typical NAM sentences.

7. Conclusion

The results of this experiment confirm enactive motion as a primary motivator of NAM, with images showing objects that contain DE+Aff elicit the highest number of NAM expressions. For NAM, Khasi speakers frequently use *manner* verbs, *path* verbs and *path + manner* conflating verbs. However, the data shows that participants talk not only about figure and ground in terms of path, manner and deixis, but also relationship in much greater detail through the use of adverbs. We find a distinction being made between path and how the path approaches the ground, information on precision and destination in the use of adverbs. This ground-figure relationship also finds a nuanced description in the use of *path+manner* verbs, which express the way in which the object changes boundaries and how the body configures itself into a different spatial layout. These relations between figure and ground need further exploration.

The most frequently used verb for NAM expressions is *jaʸd*, a manner verb. It occurs in its bleached form in most cases and is used for *all types of images*, along with allative or ablative case markers. Direction is expressed through case markers, which always accompany a motion verb, regardless of what it conflates with the verb's motion information. The language also has a rich repertoire of deictic markers which are used to express region change when coupled with case markers. Deictic markers are used to indicate distances or to give an approximation of the length of extension by the use of proximal or distal markers. In addition, deictic markers are also used to mark changes of region, from the inside of a tunnel to the outside or vice versa.

While *jaʸd* is used across image types, the second and third most frequently used verbs *miʔ* 'exit' and *ruŋ* 'enter', are used for images where objects *change boundaries*, confirming Slobin's hypothesis that boundaries elicit path conflating verbs (Slobin 1996). These verbs also convey the direction of extension of the object from the speakers' perspective, for images with objects that had depth extension. In the generic use of the motion verbs *wan* 'come' and *leʲt* 'go', there is an element of deixis which is used to denote the speaker's point of view. Compound verbs retain information about path and manner, when used with deictic verbs. The differentiation between direction/deixis from path that is accentuated in Khasi through the use of compound verbs. In addition, while Khasi follows the path and manner conditions as proposed in Matsumoto (1996) particularly in the case of *jaʸd* , manner+path conflating verbs do not follow his Manner condition.

In terms of Blomberg's typology, Khasi has non-actual path, non-actual motion and non-actual movement. We find non-actual movement in structures involving the verb *par* 'crawl'. Although rare, it is used three times in our data to describe a physical configuration of roads and pipes going through a tunnel. Similarly, the word *pon* 'bridge' in Khasi refers to an act performed by the bridge. Blomberg's hypothesis about the classification of languages based on the expressions used for NAM, that a language having non-

actual movement would have non-actual movement and path as well, applies to Khasi as well, giving us the following schemata:

Non-actual path > Non-actual motion > Non-actual movement

Verbs like *par 'crawl'* point to the variations in the types of manner information that languages encode in NAM, a point made by other scholars as well (Rojo and Velenzuela 2003; Blomberg 2014). It would be interesting to systematically explore further the types of manner information that are allowed by different languages in representing NAM expressions.

To simplify and categorize Khasi into a Satellite-framed or Verb-framed language, or even as an equipollent language, is difficult, and we find that speakers produce verbs in ways that suit the stimuli, using path-conflating verbs very often when talking about changes in boundary. However, due to the propensity for the use of the bleached verb *jaʸd* + Satellite, we can say that Khasi behaves very similar to a satellite-framed language, even if it has equipollent verbs.

Abbreviations

1SG	First person, singular
3FSG	Third person, feminine, singular
3MSG	Third person, masculine, singular
3PL	Third person, plural
1PA	1st person+afford motion
1PNA	1st person-afford motion
3PA	3rd person+afford motion
3PNA	3rd person-afford motion
ABL	Ablative
ACC	Accusative
ALL	Allative
CL	Classifier
CONJ	Conjunction
DEI	Deictic
DIM	Dimunitive
DIST	Distal
FUT	Future
GEN	Genitive
HAB	Habitatual
IMI	Imitative
INF	Infinitive
EXTERIOR	Region-exterior
INTERIOR	Region-interior
INVISIBLE	Invisible (deictic)
LOC	Locative
NMZ	Nominaliser
NON.HUM	Non-Human
PROX	Proximal
PST	Past
REL	Relativiser

APPENDIX

Figure 1. *DE+Aff (Objects that extend in depth and that afford human motion)*

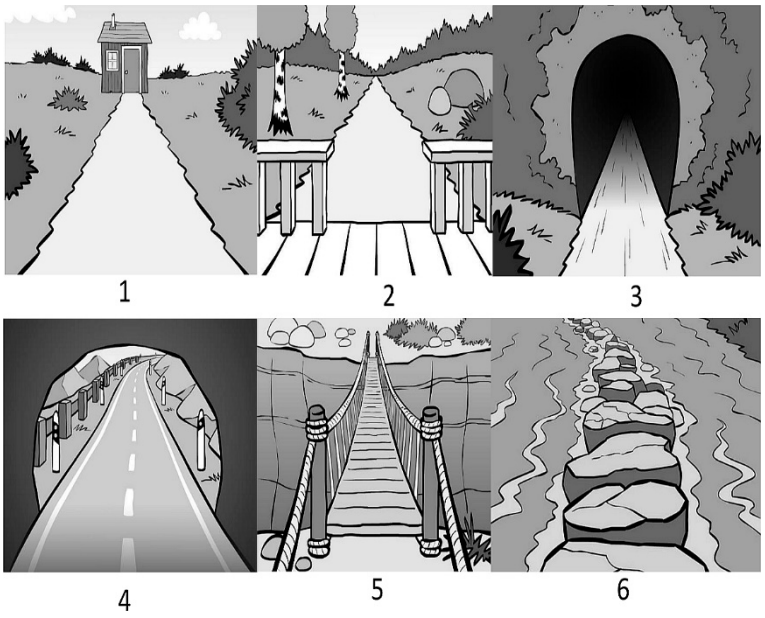


Figure 2. *DE-Aff (Objects that extend in depth and that do not afford human motion)*

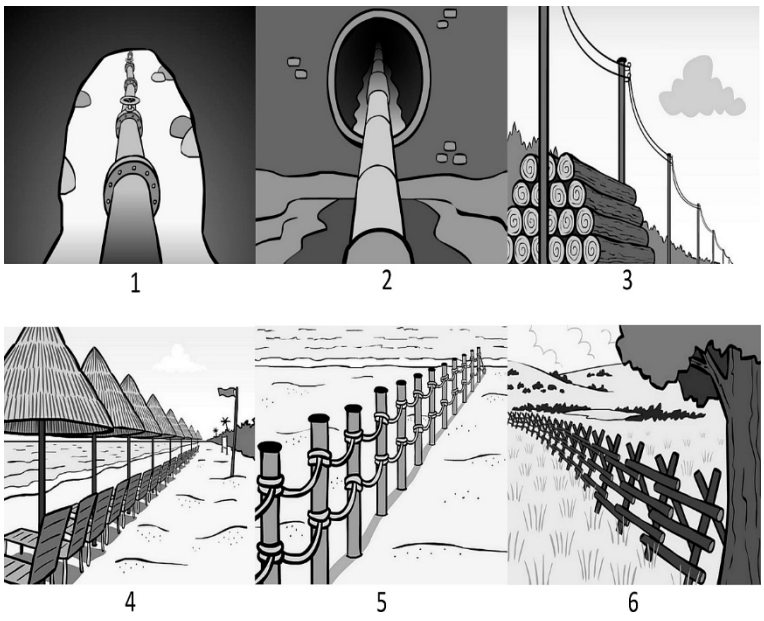


Figure 3. *AE+Aff (Objects that extend across and that afford human motion)*

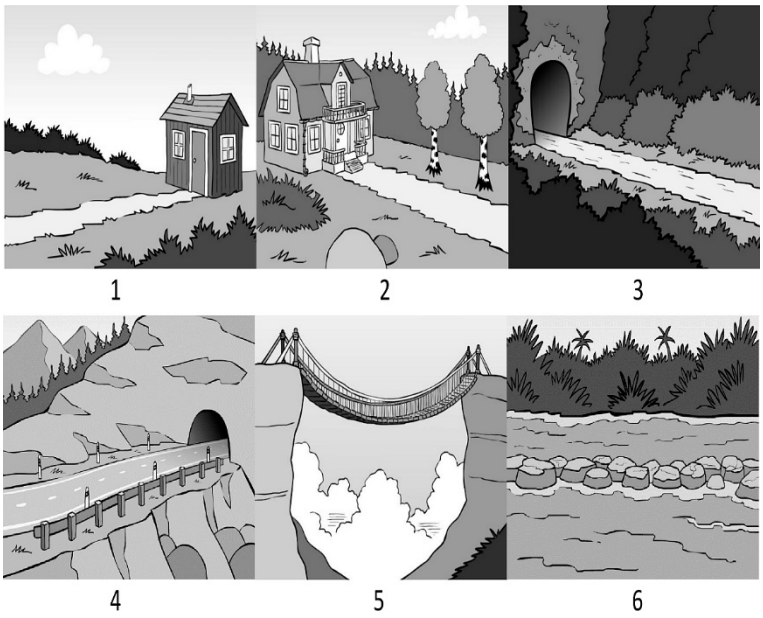
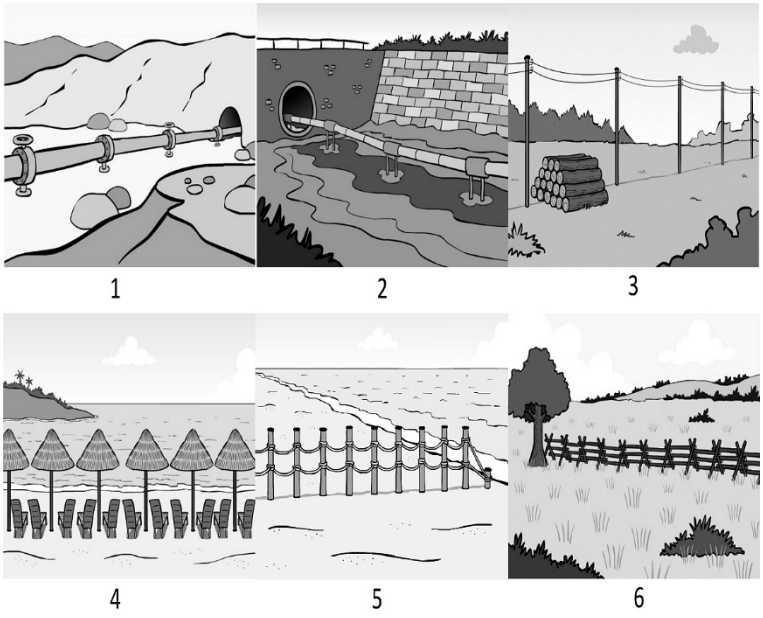


Figure 4. *AE-Aff (Objects that extend across and that do not afford human motion)*



Linguistic data:

1 *ŋa-joʔi* *ka-wei* *ka-lɨnti* *ba-* ***jaːʲd*** *ʃa-jeŋ*
1SG-see 3FSG-one 3FSG-path REL walk ALL-house
'I see a path that walks to a house.' (DE+Aff, image 1)

2 *ŋa-jɔʔi* *ka-wei* *ka-lɨnti* *ba-* ***jaːʲd*** *stət* *ʃa-jeŋ*
1SG-see 3FSG-one 3FSG-path REL walk quickly ALL-house
'I see a path that walks quickly to a house.' (DE+Aff, image 1)

3a *Ka-lɨnti* *ka-ba- beʲt* *bad* *ha-rud* *joŋ-ka-ne-ka-lɨnti*

3FSG-path 3FSG-REL-straight and LOC-side GEN-3FSG-PROX-3FSG-path

'A straight path and on the side of this road

3b *ki-don ar-tɨlli ki-deŋ bad artɨlli ki-maw*
exist two- NON.HUM.CL 3PL-tree and two-num 3PL-stone
there are two trees and two stones.' (DE+Aff, image 2)

4 *ka-wei-ka-lɨnti na-ka-yeŋ ka-ba* ***jalam*** *beʲt- beʲt naŋ-ta*
3FSG-one-3FSG-path ABL-3FSG-house 3FSG-REL lead straight-straight ABL-there

'A path from the house that leads straight-straight from there.' (DE+Aff, image 2)

5a *ka-lɨnti ka-lɔŋ ka-ba beʲt bad*
3FSG-path 3FSG-is 3FSG- REL straight CONJ
'A path which is straight and

5b *ka-ba* ***jalam*** *ʃa-pɔʔ-ka-ɟaka ba iˈkʰlaʷ*
3FSG- REL lead ALL-INTERIOR-3FSG-place REL seem-forest
which leads into a place that is forest-like…' (DE+Aff, image 2)

6 *ŋa-jɔʔi ka-lɨnti (ka)-ba ɟrɔŋ (ka)-ba* ***pɔi*** *ʃa-jeŋ- breʷ*
1SG-see 3FSG-path (3FSG)-REL long (3FSG)-REL reach ALL-house-person
'I see a path that is long, that reaches to a house of a person.' (DE+Aff, image 2)

7a *na-ka-ne-ka- baranda* ***ka-miʔ*** *ka-lɨnti- jaːʲd*
ABL-3FSG-PROX-3FSG-veranda 3FSG-exit 3FSG-path-walk
'From this veranda exits a walking-path

7b *ka-ba-n leʲt ʃa-(pause) ka-ba-n* ***miʔ***
3FSG-REL-FUT go ALL 3FSG-REL-FUT exit
that will go to.., that will exit.' (DE+Aff, image 2)

8a *ka-surɔk (ka)-ba* ***ruŋ*** *ʃa-pɔʔ-ka- tʌnəl*
3FSG-road 3FSG-REL enter ALL-INTERIOR-3FSG-tunnel
'A road that enters into a tunnel;

8b *ŋi ŋi-peit ja-ka-ne ka-surɔk na-pdeŋ-ɟɔŋ-ka*
3PL 3PL-look ACC-3FSG-PROX 3FSG-road ABL-centre-GEN-3FSG
we are looking at this road from its center.' (DE+Aff, image 3)

9 *ka-ruŋ ʃa-ka-tʌnel (ka)-ba jɨlleʷ*
3FSG-enter ALL-3FSG-tunnel 3FSG-REL deep
'It enters into a tunnel which is deep.' (DE+Aff, image 3)

10 *ka-lɨnti (ka)-ba* ***jaːʲd*** *liŋba-ka- tʌnəl*
3FSG-way 3FSG-REL walk through-3FSG-tunnel
'A path that walks through a tunnel.' (DE+Aff, image 3)

11a *ka-dɔn ka-surɔk (ka)-ba* ***miʔ***
3FSG-exist 3FSG-road 3FSG-REL exit
'There is a road that exits

11b *na- ka- krem (ka)-ba* ***kʰun*** *ʃa-ka-mɔn*

ABL-3FSG-cave 3FSG-REL turn ALL -3FSG-right
from a cave that turns to the right.' (DE+Aff, image 4)

12 *ka-surɔk ka-ba* ***wan-miʔ*** *liŋba-u-wei u-lom*
3FSG-road 3FSG-REL come-exit through-3MSG-one 3MSG-hill
'A road that comes exiting through a hill.' (DE+Aff, image 4)

13 *ka-ɟiŋ-keŋ ka-ba na-ʃi-liaŋ lom ʃa-ʃi-liaŋ lom*
3FSG-NMZ-sling 3FSG-REL ABL-one-side hill ALL-one-side hill
'A bridge from one side of a hill to a side of another hill…' (DE+Aff, image 5)

14 *u-paʸt u-ba* ***jaːʲd*** *beʲt - beʲt ʃa-bar na-krem ʃa-bar*
3MSG-pipe 3MSG-REL walk straight-straight ALL-EXTERIOR ABL-cave ABL-outside
'A pipe which walks very straight to the outside, from the cave to the outside…' (DE-Aff, image 1)

15 *u-paip u-ba* ***pʰruŋ*** *ha-pɔʔ-kʰɨndəʷ*
3MSG-pipe 3MSG-REL Insert LOC-INTERIOR-earth
'A pipe that inserts into the earth.' (DE-Aff, image 1)

16 *ki-tɨllɔŋ-um ki-ba* ***sam*** *liŋba ki-maʷ*
3PL-source-water 3PL-REL pierce through 3PL-stone
'The water sources that pierce through the stones.' (DE-Aff, image 1)

17a *u-paip u-ba-* ***ruŋ*** *ha-pdeŋ ka-wei ka -tʰleʷ*
3MSG-pipe 3MSG-REL enter LOC-center 3FSG-one 3FSG-hole
'A pipe that enters in the center (of) one hole

17b *bad u-ta- u-paip u- jaːʲd ʃa-kʰmat*
CONJ 3MSG-INV-3MSG-pipe 3MSG-walk ALL-front
and that pipe walks forward' (DE-Aff, image 2)

18 *u-wei u-paip* ***u-ruŋ*** *ʃa-pɔʔ-krem*
3MSG-one 3MSG-pipe 3MSG-enter ALL-INTERIOR-cave
'One pipe enters into a cave.' (DE-Aff, image 2)

19 *ka–fens ka-ba* ***jaːʲd*** *naŋ-ne ʃa-tei-ʃa-pɔʔ- ka-um*
3FSG-fence 3FSG-REL walk ABL-PROX ALL-DIST-ALL-INTERIOR-3FSG-water
'A fence that walks from here to there into the water.' (DE-Aff, image 5)

20 *…ha-kʰmat u-ta-u lom dɔn ki-ɟiŋ-ker ki-ba* ***wan-pɔi*** *ʃa-kʰmat...*
LOC-front 3MSG-INV-3MSG-hill exist 3PL-NMZ-fence 3PL-REL come-reach ALL-front
'In front of that hill, there are fences that come reaching to the front.' (DE-Aff, image 6)

21a *…ki-ɟiŋ-ker ki-ba sdaŋ na-u-ne-u-deŋ*
...3PL-NMZ-fence 3PL-REL start LOC-3MSG-PROX-3MSG-tree
'Fences that start from this tree

21b *ha-duʔ ba kut ʃi-lɨnter ɟɔŋ-ka-ne-ka-madan*

	LOC-till	REL		end	one-breadth	GEN-3MSG-PROX-3FSG-ground	

'till the end, the whole breadth of the ground…' (DE-Aff, image 6)

22	*ka-wei-ka-lɨnti*	*ka-ba*	***jaːʲd***	*siak,*	*t ha-k^{h}mat*	*ɟɨŋ-k^{h}aŋ*	
					ɨ		
					ŋ		
					k		
					^{h}		
					o		
					ʔ		
	3FSG-one-3FSG-path	3FSG-REL	walk	straight on	h ALL-front i t	NMZ-close	

'A path that walks straight on, hits the front of the door.' (AE+Aff, image 1)

23a	*Don*	*ar-tilli*	*ki-ɟɟŋ-k^{h}aŋ-jɨt*	*i-jeŋ*	*ba-rit*	
	Exist	TWO- NON.HUM.CL	3PL-NMZ-close-glass	3DIM-house	REL-small	

'There are two windows, a house that is small,

23b	*i-we^{y}*	*i- ɟɟŋ-k^{h}aŋ*	*ki-phlaŋ*	*bad*	*ka-lɨnti-jad*	
	3DIM-one	3DIM-NON-close	3PL-grass	and	3FSG-path-walk	

one door, grass and a path.' (AE+Aff, image 1)

24	*ka-lɨnti*	*ka-ba*	***leʲt - jaːʲd***	*ka-ba*	*tɨŋ-k^{h}oʔ*	*ha-k^{h}mat-ɟɨŋ-k^{h}aŋ*	
	3FSG-trail	3FSG-REL	go-walk	3FSG-REL	hit	LOC-front-NMZ-close	

'A trail that goes-walks hitting the front of the door.' (AE+Aff, image 2)

25	*….ka-ta*	*ka-surɔk*	***ka-par***	*na-pɔʔ- ɟɔŋ-u-lom*	
	...3FSG-INV	3FSG-road	3FSG-crawl	ABL-INTERIOR-GEN-3MSG-hill	

'That road crawls from inside of the hill…' (AE+Aff, image 4)

26	*ka-ɟiŋkeŋ*	*ka-ba*	***bteŋ***	*na-u-wei*	*u-lum*	*ʃa-u-wei*	*u-lom*
	3FSG-bridge	3FSG-REL	continue	ABL-3MSG-one	3MSG-hill	ALL-3MSG-one	3MSG-hill

'A bridge that continues from one hill to another hill.' (AE+Aff, image 5)

27	*ka-ɟiŋ-keŋ*	*ka-ba*	***pon***	*na-ʃi-liaŋ*	*ʃa-ʃi-liaŋ*
	3FSG-NMZ-bridge	3FSG-REL	bridge-over	ABL-one-side	ALL-one-side

'A bridge that bridges over from one side to another side.' (AE+Aff, image 5)

28	*...u-paip...*	***u-par***	*naŋ-ta- na-pɔʔ- ɟoŋ-u-lom*
	...3MSG-pipe	3MSG-crawl	ABL-INV-ABL-INTERIOR-GEN-3MSG-hill

'A pipe crawls from that from inside of the hill…' (AE-Aff, image 1)

29a	*u-pait- um*	***u- jaːʲd***	*lɨŋba*	*u-lum- baʔ*
	3MSG-pipe-water	3MSG-walk	through	3PL-mountain-big

'A water pipe walks through a big mountain

29b	*bad*	***u-ksam***	*lɨŋba*	*u-lom*

	CONJ	3PL-claw	through		3MSG-mountain

and claws through the mountain.' (AE-Aff, image 1)

30	*ka-ɟiŋ-ker*	*ka-sdaŋ*	*na-u-deŋ*	***ka- ja:ʲd***	*ter-ter*
	3FSG-NMZ-fence	3FSG-start	ABL-3MSG-tree	3FSG-walk	in a sequence

'A fence starts from a tree, goes consecutively (on and on).' (AE-Aff, image 6)

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